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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/530,747	10/23/00	KESSLER	C 4817/OR

022829
ROCHE MOLECULAR SYSTEMS INC
PATENT LAW DEPARTMENT
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HM22/1222

EXAMINER

TAYLOR, J

ART UNIT

PAPER NUMBER

1655

DATE MAILED:

12/22/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/530,747

Applicant(s)

KESSLER ET AL.

Examiner

Janell Taylor Cleveland

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 23 October 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____

DETAILED ACTION

Specification

1. The following guidelines illustrate the preferred layout and content for patent applications. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

The specification was not found to be arranged properly. The following order or arrangement is preferred in framing the specification and, except for the reference to "Microfiche Appendix" and the drawings, each of the lettered items should appear in upper case, without underlining or bold type, as section headings. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) Title of the Invention.
- (b) Cross-References to Related Applications.
- (c) Statement Regarding Federally Sponsored Research or Development.
- (d) Reference to a "Microfiche Appendix" (see 37 CFR 1.96).
- (e) Background of the Invention.
 1. Field of the Invention.
 2. Description of the Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) Brief Summary of the Invention.
- (g) Brief Description of the Several Views of the Drawing(s).
- (h) Detailed Description of the Invention.
- (i) Claim or Claims (commencing on a separate sheet).
- (j) Abstract of the Disclosure (commencing on a separate sheet).
- (k) Drawings.
- (l) Sequence Listing (see 37 CFR 1.821-1.825).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 is drawn to "producing a plurality of

amplificates of a section of the nucleic acid with the aid of two primers, one of which can bind to a first binding sequence (A) of one strand of the nucleic acid and the other can bind to a second binding sequence (C') which is essentially complementary to a sequence C which is located in the 3' direction from A and does not overlap A, in the presence of a probe with a binding sequence D which can bind to the third sequence (B) located between the sequences A and C or to the complement (B') thereof, wherein this probe contains a reporter group and a quencher group, using a polymerase having 5' nuclease activity..." This claim is unclear for several reasons. First, it is unclear from the language of the claim which is the sequence of the primer or probe and which is the sequence of the target to which it is binding. In other words, the claim states that "the other can bind to a second binding sequence C' which is essentially complementary to a sequence C which is located in the 3' direction from A..." This is confusing because if C' is the binding sequence, in other words the target, then how is its complement, which is C, located near A? Furthermore, if one primer binds to A, it would seem that the other should bind to C, not C', as the claim seems to suggest. With regard to the probe, it is not clear how sequence D can bind to both B and B'. It is suggested that the claim be amended to clearly state which sequence is the actual sequence of the primer and probe, and which is the sequence to which it binds, or the binding sequence. Typically, the sequence of the primer or probe is given the representation of A, B, and C, while the sequence of the target, to which it binds, is given the representation A', B' and C', corresponding to the respective probes or primers. Clarification is required.

4. Claims 3 and 6-8 are drawn to the probe or primers not being specific for the nucleic acid to be detected. This is unclear because if the probe or primer is not specific for the nucleic acid to be detected, it is unclear how they would hybridize. Clarification is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Livak et al (USPN 5,538,848).

The claims are drawn to a method for the detection of a nucleic acid comprising the steps: (a) producing a plurality of amplificates of a section of the nucleic acid with the aid of two primers, one of which can bind to a first binding sequence (A) of one strand of the nucleic acid and the other can bind to a second binding sequence (C') which is essentially complementary to a sequence C which is located in the 3' direction from A and does not overlap A, in the presence of a probe with a binding sequence D which can bind to the third sequence (B) located between the sequences A and C or to the complement (B') thereof, wherein this probe contains a reporter group and a quencher group, using a polymerase having 5' nuclease activity, and (b) detecting the nucleic acid by measuring a signal which is caused by the release of the reporter group, wherein the amplificates formed with the aid of the primers have a length of less than 75

nucleotides. Other claims are drawn to the probe sequence not overlapping that of the primers, the binding sequences not being specific for the nucleic acid to be detected, the primer being less than 61 nucleotides in length, the probe being labeled with a fluorescent quencher as well as a fluorescent dye, and to the nucleotides being complementary to A, G, C, and T.

Livak et al. teach "A method is provided for monitoring the progress of nucleic acid amplifications that rely on a nucleic acid polymerase having 5' to 3' exonuclease activity [such as Taq polymerase, which also has 5' nuclease activity, as disclosed in the claims]. An important feature of the method is providing an oligonucleotide probe having a *reporter molecule* and a *quencher molecule* at either end such that the quencher molecule substantially quenches any fluorescence from the reporter whenever the oligonucleotide probe is in a single stranded state and such that the reporter is substantially unquenched whenever the oligonucleotide probe is in a double stranded state hybridized to a target polynucleotide." (Abstract). Livak et al. also teach "The binding site of the oligonucleotide probe is located between the PCR primers used to amplify the target polynucleotide." (Col. 4, line 20). In other words, Livak et al. teach two primers and a probe which hybridizes in between the primers, and contains a reporter and a quencher molecule.

Livak et al. do not teach the primer length, or that the primer or probe is not specific for the target.

It would have been obvious to one of ordinary skill in the art at the time of the invention that the primer would have been less than 75, or 61, nucleotides. This is

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because it was well known in the art at the time of the invention that primers less than 61 nucleotides were superior to longer ones in certain types of amplification reactions because they hybridized to the proper sequence more readily and there was less chance of competitive hybridization or secondary structure formation within the primer. Also, it would have been obvious to one of ordinary skill in the art to have a primer or probe which was known to amplify more than just the target nucleic acid but could, for instance, have amplified multiple species of a genus. Although it is not clear what is meant by this claim language, it was interpreted by the examiner to mean that the primers and probes were able to amplify multiple targets from different sources.

Summary

The specification is objected to. Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, and under 35 U.S.C. 103(a). No claims are free of the prior art.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janell Taylor Cleveland, whose telephone number is (703) 305-0273.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Jones, can be reached at (703) 308-1152.

Any inquiries of a general nature relating to this application should be directed to the Group receptionist whose telephone number is (703) 308-0196.

Papers related to this application may be submitted by facsimile transmission. Papers should be faxed to Group 1634 via the PTO Fax Center using (703) 305-3014 or

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305-4227. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG (November 15, 1989.)

Janell Taylor Cleveland

December 19, 2000


W. Garb Jones
Supervisory Patent Examiner
Technology Center 1600

12/19/00